early treatment with angiotensin converting enzyme inhibitors, β blockers, or both should be instituted. SRed and TRc can be used to classify boys with DMD as being at high or low risk. Selectively instituting early treatment and potentially slowing down the progress to DCM may be possible. SR may be used in future longitudinal studies assessing the beneficial effect of treatment of asymptomatic boys with DMD.

Tissue Doppler imaging echocardiography may be angle dependant. Chest deformity and the tachycardia made acquisition difficult. The high signal to noise ratio may be the greatest limitation of the technique with the current technology.

In this study we showed that SR and TV are significantly lower in asymptomatic boys with DMD, when conventional echocardiography failed to show any abnormality. Myocardial function in these patients appears to be impaired from a very young age. SR and TV can be reliably used to identify early myocardial dysfunction and predict an adverse outcome. These conclusions need further validation on independent datasets and larger population samples.

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IMAGES IN CARDIOLOGY

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Atrial myocarditis: a possible cause of idiopathic enlargement of bilateral atria

In March 1997, a 72 year old woman with a cardiothoracic ratio of 90% on chest *x* ray was admitted to our hospital with a haemorrhagic gastric ulcer. However, at that time, she had no cardiac symptoms. Epstein's anomaly was excluded and no other congenital or acquired cardiac abnormality without atrial fibrillation and tricuspid regurgitation was detected. We then made the diagnosis of idiopathic dilatation of the bilateral atria. In October 2003, she came back to our hospital because of congestive heart failure with progressing mitral regurgitation. The echocardiogram revealed notably enlarged atria (right atrium 115.0 × 73.7 mm in diameter; left atrium 102.0 × 53.5 mm in diameter) (panel A). However, no dilation of the ventricles was observed and systolic function was normal. Since bilateral heart failure was resistant to conventional treatment, she received surgical reduction of both atria and tricuspid and mitral valvular annuloplasty was performed because no organic valvular degeneration was confirmed in the operation. Microscopic examination revealed persistent myocarditis with severe scarring (panel B). The major histocompatibility complex (MHC) class I antigens, which are required for the action of direct cytotoxic T cells, were found to be expressed on the myocytes and over expressed in the interstitial spaces (panel C). MHC class II antigens were also over-expressed in the interstitium. This case suggests that this congenital benign anomaly might be contributed to by atrial persistent myocarditis. This unique condition should be reinvestigated using up-to-date diagnostic tools.

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